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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,469	12/17/2003	Bernhard W. Borschert	K-2104	8203
27877	7590	04/26/2005	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			TALBOT, MICHAEL	
			ART UNIT	PAPER NUMBER
			3722	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/738,469

Applicant(s)

BORSCHERT ET AL.

Examiner

Michael W Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2 and 10-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Houser '617. Houser '617 shows in Figures 1-3 a twist drill (1) having a cutting tip (15) including a front flank face (31), a cylindrical tool body (7) extending rearwardly from the cutting tip, a shank (11), a rotational axis (18) and at least one flute (13) formed on the periphery surface and extending from the front flank surface. Houser '617 further shows the flute having a first positive helical portion having a helix angle ranging from about 15° to about 35°, and specifically about 28° and a second helical portion twisting in a direction opposite of the first helical portion (col. 5, lines 22-25). As a result of the rate of change of the helix being -5° per millimeter to about 220° per millimeter, it is anticipated that a first helical portion having a positive helix angle being constant throughout a predetermined distance, a second helical portion having a helix angle extending from the rear end of the first helical portion and having a twist in the opposite direction, and a third helical portion having a helix angle extending from the rear end of the second helical portion and having a twist in the opposite direction. Thus forming a S-shaped flute configuration. For example, the first helical portion starts with a constant 28° positive helix angle and continues for a predetermined distance using the 0° rate of change. Then a second helical portion extending from the first helical portion uses the -5° rate of change and after 6 millimeters will have reached a helix angle of -2°. This -2° helix angle continues for a

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predetermined distance using the 0° rate of change. Then a third helical portion extending from the second helical portion uses a 7° rate of change and after 1 millimeter will have reached a helix angle of 5°. This 5° helix angle continues for a predetermined distance using the 0° rate of change. Thus forming a S-shaped flute configuration.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Houser '617 in view of McCormick '164. Houser '617 lacks the twist drill having an interchangeable cutting tip. McCormick '617 shows in Figure 1 a twist drill (10) having a removable cutting tip (16). In view of this teaching of McCormick '164, it is considered to have been obvious to add the interchangeable cutting tip feature of McCormick '164 to the twist drill of Houser '617 for ease of replacement of cutting bit having worn cutting edges and additionally, the removed cutting bit can be sharpened for later use.

Claims 4-8,10,11 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaconi '674 in view of Houser '617. Jaconi '674 shows in Figures 1-3 a twist drill (10) having a S-shaped cutting tip (60) including a front flank face (31), a substantially cylindrical steel or cemented carbide (col. 5, lines 16-22) tool body (18) extending rearwardly from the cutting tip, a shank (14), a rotational axis (L) and a pair of flutes (22,24) formed on the periphery surface and extending from the front flank surface. Jaconi '674 further shows a web thickness depending upon the overall diameter of the drill (i.e. shank plus body, col. 4, lines 57-61) that can remain constant, be tapered or simply vary in diameter (col. 3, line 61 through col. 4, line 9).

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Jaconi '674 further shows the flutes having a constant positive helical shape with a helix angle ranging from about 10° to about 40°, more specifically about 20° to 30°. Jaconi '674 lacks a second helical portion twisting in a direction opposite of the first helical portion. Houser '617 shows that the twist drill can be broken down into first, second and third helical portions having respective positive, negative and positive helix angles. In view of this teaching of Houser '617, it is considered to have been obvious to replace the single helical configuration of Jaconi '674 with another well-known multi-helical configuration consisting of alternating positive, negative and positive helix angles by Houser '617 to enhance the chip evacuation means by reducing the chip travel length and to optimize the helix angles based upon the material composition of the workpiece.

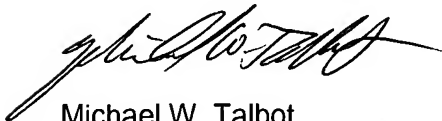
Claims 3,4,7-9 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muhlfriedel et al. 2003/0175086 in view of Houser '617. Muhlfriedel et al. 2003/0175086 shows in Figures 2,3B,3D,3F,10 and 15 a twist drill (2) having a S-shaped cutting tip (6) including a front flank face (8), a cylindrical tool body (46) extending rearwardly from the cutting tip, a shank (44), a rotational axis (L), a pair of flutes (10) formed on the periphery surface and extending from the front flank surface and coolant bores (9). Muhlfriedel et al. 2003/0175086 further shows a constant or tapered web diameter (K) over the longitudinal direction (L) of the drill (col. 6, last three lines of paragraph [0062]). Muhlfriedel et al. 2003/0175086 further shows the flutes having a constant positive helical shape and that the cutting tip can be interchangeable (page 4, paragraph [0029]). Muhlfriedel et al. 2003/0175086 lacks a second helical portion twisting in a direction opposite of the first helical portion. Houser '617 shows that the twist drill can be broken down into first, second and third helical portions having respective positive, negative and positive helix angles. In view of this teaching of Houser '617, it is considered to have been obvious to replace the single helical configuration of Muhlfriedel et al.

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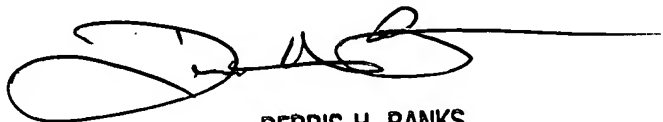
2003/0175086 with another well-known multi-helical configuration consisting of alternating positive, negative and positive helix angles by Houser '617 to enhance the chip evacuation means by reducing the chip travel length and to optimize the helix angles based upon the material composition of the workpiece.

3. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mr. Derris Banks, may be reached at 571-272-4419.

In order to reduce pendency and avoid potential delays, Group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 703-872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.



Michael W. Talbot
Examiner
Art Unit 3722



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